

April 12, 2002



Information Technology

The Preventive Health Care
Application and an Associated
Upgrade
(D-2002-081)

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Abstract <p>The Preventive Health Care Application was a tool designed to enable clinicians to deliver and track appropriate and timely preventive services provided to all enrolled military health system members. The Preventive Health Care Application, which included three off-the-shelf modules, was developed to support the Put Prevention Into Practice program by providing health care providers the ability to gather, maintain, retrieve, manipulate, analyze, display, and print preventive health care information. Beginning in 1996, the Office of the Assistant Secretary of Defense (Health Affairs) developed the Preventive Health Care Application to be a stand-alone application that would interface with the Composite Health Care System II.</p>		
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Acronyms

CHCS	Composite Health Care System
OASD(HA)	Office of the Assistant Secretary of Defense (Health Affairs)
HEAR	Health Enrollment Assessment Review
MTF	Military Treatment Facility
PHCA	Preventive Health Care Application
PPIP	Put Prevention Into Practice



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DEPARTMENT OF DEFENSE
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April 12, 2002

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (HEALTH
AFFAIRS)

SUBJECT: Audit Report on the Preventive Health Care Application and an Associated
Upgrade (Report No. D-2002-081)

We are providing this report for your information and use. We conducted the
audit in response to an allegation to the Defense Hotline.

We appreciate the courtesies extended to the audit staff. For additional
information on this report, please contact Mr. Scott J. Grady at (757) 766-3268
(sgrady@dodig.osd.mil) or Mr. Michael A. Joseph at (757) 766-3816, extension 223
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members are listed inside the back cover.

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Report No. D-2002-081

(Project No. D2001LF-0184)

April 12, 2002

The Preventive Health Care Application and an Associated Upgrade

Executive Summary

Introduction. The Preventive Health Care Application was a tool designed to enable clinicians to deliver and track appropriate and timely preventive services provided to all enrolled military health system members. The Preventive Health Care Application, which included three off-the-shelf modules, was developed to support the Put Prevention Into Practice program by providing health care providers the ability to gather, maintain, retrieve, manipulate, analyze, display, and print preventive health care information. Beginning in 1996, the Office of the Assistant Secretary of Defense (Health Affairs) developed the Preventive Health Care Application to be a stand-alone application that would interface with the Composite Health Care System II.

Objectives. This audit was performed in response to a Defense Hotline allegation related to the operability and cost of the Preventive Health Care Application and an associated upgrade. The audit objective was to determine whether the Preventive Health Care Application and an associated upgrade adequately support the Put Prevention Into Practice program. We also reviewed the management control program applicable to the fielding of the Preventive Health Care Application and an associated upgrade.

Results. The allegation that millions of dollars were spent on a software application that became useless following an upgrade and subsequent patch was partially substantiated. The Preventive Health Care Application had many operability problems and was not widely accepted by the military health care community. In December 1999, the Office of the Assistant Secretary of Defense (Health Affairs) put the Preventive Health Care Application in a legacy status and stopped the development and additional fielding of the Preventive Health Care Application. Based on Office of the Assistant Secretary of Defense (Health Affairs) financial data, approximately \$27 million of Defense Health Program funds were spent developing and fielding the Preventive Health Care Application. The problems encountered with the development and implementation of the Preventive Health Care Application occurred several years ago. Changes planned for the Composite Health Care System II will include the preventive health care requirements. Further, the Office of the Assistant Secretary of Defense (Health Affairs) planned several improvements in the systems development and fielding process, which, if fully implemented, should reduce the likelihood of similar

problems occurring with future systems. For details of the audit results see the Finding section; see Appendix A for a discussion of our review of the management control program.

Management Action. The Office of the Assistant Secretary of Defense (Health Affairs) recognized the need to establish, execute, and monitor plans to assist with successful implementation of medical information systems. In May 1999, it established two separate organizations that work together on medical information systems: one handles functional (user) requirements and the other handles information systems (technical) development. Moreover, the Office of the Assistant Secretary of Defense (Health Affairs) plans to focus on ensuring business processes are incorporated in an implementation plan before fielding an information system. Further, the Office of the Assistant Secretary of Defense (Health Affairs) planned several actions to improve the planning process and to increase user involvement throughout the development and fielding of information systems. Specifically, the Office will hold pre-deployment meetings and conferences with members of the various functional areas to discuss practices, plans, and strategies to help manage and set user expectations. The Office of the Assistant Secretary of Defense (Health Affairs) also developed a post-implementation review, which includes measuring customer feedback, to ensure projected benefits are achieved. Although the Office of the Assistant Secretary of Defense (Health Affairs) provided documentation concerning those improvements, it was not part of this audit's scope to verify or evaluate the effectiveness of the improvements.

Management Comments. We provided a draft of this report on February 25, 2002. No written response to this report was required and none was received. Therefore, we are publishing this report in final form.

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Background

This audit was performed in response to an allegation to the Defense Hotline that millions of dollars may have been wasted on travel, training, and procurement costs in the development and fielding of the Preventive Health Care Application (PHCA). The complaint alleges that the software application became useless following an upgrade and that a subsequent patch failed to solve problems created by the upgrade. PHCA was fielded by the Tri-Service Medical Systems Support Center, Brooks Air Force Base, Texas, a former component of the Office of the Assistant Secretary of Defense (Health Affairs) (OASD[HA]). PHCA was designed to help fulfill requirements of the Put Prevention Into Practice (PIIP) program.

Put Prevention Into Practice. PIIP was a campaign developed by the Department of Health and Human Services to transform the focus of health care delivery in the United States from treatment of existing injuries and illness to prevention of illness or injuries and promotion of wellness. A memorandum from the Assistant Secretary of Defense (Health Affairs), March 31, 1998, required all military treatment facilities (MTFs) to develop strategies and systems to successfully implement PIIP by April 1999. The memorandum requires MTFs to:

- administer annually the computerized Health Enrollment Assessment Review (HEAR) II to all TRICARE Prime¹ beneficiaries, collecting information on patients' health habits and other factors that may affect their overall health;
- implement aggressive campaigns to screen immunization status at every visit and provide immunizations required for all infants, children, adolescents, and adults; and
- provide and document clinical preventive screenings, other services, and health promotion counseling.

PHCA. PHCA was a tool designed to enable clinicians to deliver and track appropriate and timely preventive services provided to all enrolled military health system members. PHCA, which included three off-the-shelf modules, was developed to support the PIIP program by providing health care providers the ability to gather, maintain, retrieve, manipulate, analyze, display, and print preventive health care information. Beginning in 1996, OASD(HA) developed PHCA to be a stand-alone application that would interface with the Composite Health Care System (CHCS) II. OASD(HA) was scheduled to field CHCS II in FY 1999; however, fielding was delayed until at least FY 2002. CHCS II was designed to generate and maintain a comprehensive historical patient record for each military health system member. PHCA began as a prototype project in

¹TRICARE Prime is one of three health care delivery options in the military health system. It is a managed care program that works like a civilian health maintenance organization.

February 1996. An Air Force multidisciplinary team developed the functional and technical requirements in May 1996 and OASD(HA) approved funding in August 1996.

DoD Instruction 6490.3, "Implementation and Application of Joint Medical Surveillance for Deployment," August 7, 1997, requires OASD(HA) to field DoD medical information systems that capture beneficiary health care information that will be used in preventive health care programs. Subsequently, OASD(HA) assumed project management responsibility for the tri-Service PHCA project. Within OASD(HA), the Tri-Service Medical Systems Support Center, which was closed in September 2001, was directly responsible for fielding PHCA. PHCA included three off-the-shelf modules:

- the HEAR II Questionnaire (a commercial off-the-shelf module),
- the Immunization Tracking Module (a commercial off-the-shelf module), and
- the Clinical Preventive Services database (a Government off-the-shelf module) that uses CHCS data to assist providers in developing patient care plans and in tracking screenings.

Objectives

The audit objective was to determine whether PHCA and an associated upgrade adequately support the PPIP program. We also reviewed the management control program applicable to the fielding of PHCA and an associated upgrade. See Appendix A for a discussion of the audit scope and methodology, the review of the management control program, and prior coverage.

Development and Fielding of the Preventive Health Care Application

The allegation that millions of dollars were spent on an application that became useless following a software upgrade and subsequent patch was partially substantiated. PHCA had many operability problems and was not widely accepted by the military health care community. The operability problems and limited user acceptance occurred because OASD(HA) had not established an implementation plan and had not adequately involved users in the development and fielding of PHCA. In December 1999, OASD(HA) put PHCA in a legacy status and stopped the development and additional fielding of PHCA. Based on OASD(HA) financial data, approximately \$27 million of Defense Health Program funds were spent developing and fielding PHCA. The problems encountered with the development and implementation of PHCA occurred several years ago. Since then, OASD(HA) planned several improvements in the systems development and fielding process, which, if fully implemented, should reduce the likelihood of similar problems occurring with future systems.

PHCA Operability and User Acceptance

Users experienced operability problems throughout the development and fielding of PHCA and did not fully accept or widely use PHCA. PHCA was originally expected to be used for at least 10 years and to be fielded at 175 sites. In a December 1999 executive session, the Military Health System Information Management Proponent Committee, within OASD(HA), decided to officially place PHCA in a legacy status and to discontinue any additional development and fielding beyond the 57 sites where it had already been fielded. In March 2000, to correct some of the user-identified problems, contractor personnel issued a Six-Month Maintenance Release² (upgrade). Beginning in October 2000, the contractor issued a patch to resolve problems associated with the upgrade. Although users experienced significant problems with the upgrade and the patch, many operational problems existed well before they were released.

In October 1999, OASD(HA) contracted Ruffin Informatics Inc. to perform an independent evaluation of PHCA because of “uncertainty about PHCA’s capabilities and potential and the need to decide whether to resume deployment of PHCA.” Ruffin Informatics Inc. reviewed nine sites where PHCA had been fielded and conducted in-depth interviews with PHCA users at those sites. It

²To be consistent with the Defense Hotline allegation, we refer to the Six-Month Maintenance Release as an upgrade, although it was only designed to fix some of the problems with PHCA.

issued its report (the Ruffin Report) on November 1, 1999. Users at the nine sites voiced concern about a variety of PHCA operability problems, such as:

- limited report writing capability,
- lack of portability, and
- problems with the Immunization Tracking Module.

In addition, a May 2000 Post-Deployment Evaluation by OASD(HA) showed that at the 32 sites that responded, the HEAR II Questionnaire was the most widely used PHCA module. Although 21 (66 percent) sites reported that they used HEAR II, only 13 (41 percent) sites used the Immunization Tracking Module. Further, only 8 (25 percent) sites used the Clinical Preventive Services module.

The more recent OASD(HA) Site Administrator Survey, performed in September 2001, showed that out of the 34 sites that responded to the survey, only 19 (56 percent) were using any portion of PHCA. One site using all three PHCA modules stated that the PHCA no longer provided HEAR II Questionnaire reports after the upgrade and patch were implemented. The Site Administrator Survey also reported problems with the Immunization Tracking Module; report writing capabilities; and system maintenance, lockouts, and outages. Respondents also stated that the application was not user friendly; was slow; and required system administration resources (people, training, and time) that were not available. We visited the Brooks Air Force Base Clinic and the Brooke Army Medical Center, Texas, and confirmed that they had PHCA interface problems, data inaccuracies, and problems resulting from the upgrade. Had OASD(HA) developed an implementation plan and solicited more user involvement before fielding PHCA, operational problems could have been minimized and user acceptance increased.

Implementation Plan and User Involvement

Implementation Plan. Before fielding PHCA, OASD(HA) did not develop a military health system-wide plan for implementing PHCA. On April 1, 2000, OASD(HA) issued a Population Health Improvement Plan; however, it focused primarily on implementing PPIP rather than PHCA and was issued after OASD(HA) had placed PHCA in a legacy status. The Ruffin Report stated that a health re-engineering and education plan for military health system members had not been disseminated. The Ruffin Report stated that such a plan was needed to encourage MTFs to develop their own implementation strategies, alleviate most of the problems resulting from lack of direction, and achieve greater consistency and alignment of user expectations. The Ruffin Report also

included statements from users that a PPIP/PHCA Implementation Plan was critical to the success of the program and should have included:

- phased implementation,
- active project management,
- population health education, and
- the integration of PPIP into routine health care delivery.

Further, the Ruffin Report noted inconsistencies in the number and types of clinics chosen to participate in the initial fielding of PHCA and the size and segments of patient populations targeted. Additionally, the absence of a clear plan for using PHCA to implement PPIP before fielding PHCA resulted in different operational implementation approaches. And finally, the Ruffin Report stated that none of the nine sites reviewed were in compliance with PPIP.

User Involvement. Many of the operability problems could have been eliminated or reduced if user input had been more actively solicited and considered before fielding PHCA. The Air Force tested a prototype of PHCA at McDill Air Force Base, Florida, in June 1997 and, in November 1997, started testing a subsequent version of PHCA at three “alpha” sites (Brooks Air Force Base Clinic, Brooke Army Medical Center, and Naval Hospital Beaufort, South Carolina). The alpha site testing, which was completed in April 1998, concentrated more on networking and system interface issues than on how PPIP would be implemented through PHCA and what business process changes were needed to effectively implement PHCA. According to the September 2001 Site Administrator Survey, users stated that they were inadequately trained and should have been more involved in the PHCA design, development, and implementation process. The Ruffin Report stated that most of the MTFs reviewed did not note any tangible benefits from using PHCA. The Ruffin Report also stated that the level of MTF commander support and physician enthusiasm varied across the MTFs and were critical to the program’s success.

PHCA Fielding

OASD(HA) spent about \$27 million on an application that was never fully fielded. In a December 1999 executive session, the Military Health System Information Management Proponent Committee, decided to officially place PHCA in a legacy status and to discontinue any additional development and fielding. In addition to PHCA operability problems and the lack of user acceptance, program and architectural changes in CHCS II contributed to the decision to place PHCA in a legacy status. Although OASD(HA) plans to include the functionality of PHCA in CHCS II, only one of the three PHCA modules, the HEAR II Questionnaire, will be used in CHCS II. As of October 2001, software was being written to include the functionality of the

other two PHCA modules in CHCS II. However, until CHCS II is fielded, DoD will not have a standard system in use at the MTFs for implementing PPIP.

Management Action

OASD(HA) recognized the need to establish, execute, and monitor plans to assist with successful implementation of medical information systems throughout the military health system. In May 1999, it established two separate organizations within OASD(HA) that work together on medical information systems: one handles functional (user) requirements and the other handles information systems (technical) development. OASD(HA) also recognized that changes in business processes and procedures must occur before an information system can be successfully fielded. Thus, OASD(HA) plans to focus on ensuring that business processes are incorporated in an implementation plan before fielding an information system as part of a particular program or policy.

Management planned several actions to improve the planning process and to increase user involvement in the development and fielding of information systems. In addition to attempting to gain a thorough understanding of the business practices at MTFs, OASD(HA) planned to ensure that users participate in the development and testing of health care information systems, so that problems can be fixed before a system is fielded. Before fielding a system, OASD(HA) plans to hold pre-deployment meetings and conferences with members of the various functional areas to discuss practices, plans, and strategies to help manage and set user expectations. OASD(HA) also developed a post-implementation review, which includes measuring customer feedback, to ensure projected benefits are achieved. Although OASD(HA) provided documentation concerning those improvements, it was not part of this audit's scope to verify or evaluate the effectiveness of the improvements.

Conclusion

The allegation that millions of dollars were wasted on PHCA because an upgrade and subsequent patch made the application useless was partially substantiated. Through FY 2001, about \$27 million of Defense Health Program funds had been spent on the development and fielding of PHCA at 57 of the 175 intended sites. OASD(HA) halted fielding of PHCA because of persistent operability problems and a lack of user acceptance. Although the operability problems and low user acceptance existed well before the upgrade and patch were issued, additional problems were created by the changes. Additionally, changes planned for CHCS II reduced the need for PHCA, because the preventive health care requirements are going to be built directly into CHCS II.

Overcoming operability problems and gaining wide acceptance among users can be difficult when implementing any new system or application and PHCA was no exception. OASD(HA) plans systemic changes in its systems development and fielding process. Actions planned by OASD(HA), if fully implemented, should reduce the likelihood of similar problems occurring with future system implementations. Consequently, we are not making any recommendations in this report.

Appendix A. Audit Process

Scope and Methodology

Our review focused on the Defense Hotline allegation that millions of dollars may have been wasted on the development and fielding of PHCA. We examined documentation supporting the PPIP program and PHCA documentation, including contractual statements of work; development, testing and evaluation documents; military health system committee meeting minutes; and financial documents. The documentation that we reviewed supporting PPIP and PHCA was dated from August 1996 through September 2001.

We interviewed DoD and contract personnel with the Information Management Technology and Reengineering Directorate, OASD(HA). We also interviewed personnel associated with the PPIP program and personnel at MTF test sites for PHCA. We interviewed personnel at the Tri-Service Medical Systems Support Center before its closure on September 30, 2001.

Scope Limitations. We did not validate the accuracy of the financial data provided by OASD(HA), used to determine that \$27 million was spent on PHCA; the Site Administrator Survey results; or the Ruffin Report. Also, we did not verify whether proposed OASD(HA) systemic changes and improvements had been implemented.

High-Risk Area. The General Accounting Office has identified several high-risk areas in DoD. This report provides coverage of the DoD Systems Modernization high-risk area.

Use of Computer-Processed Data. We did not rely on computer-processed data to perform this audit.

Audit Type, Dates, and Standards. We performed this program audit from August 2001 through January 2002 in accordance with generally accepted government auditing standards, except for the scope limitations previously discussed in the report.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD, including DoD contractors. Further details are available on request.

Management Control Program Review

DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, and DoD Instruction 5010.40, "Management Control (MC) Program Procedures" August 28, 1996, require DoD organizations to implement a

comprehensive system of management controls that provides reasonable assurance the programs are operating as intended and to evaluate the adequacy of the controls.

Scope of the Review of the Management Control Program. We reviewed the adequacy of OASD(HA) management controls applicable to the fielding of PHCA and an associated upgrade. Specifically, we reviewed OASD(HA) management controls for planning the development and fielding of PHCA. We also reviewed the adequacy of management's self-evaluation.

Adequacy of Management Controls. Although not identified as a material weakness in the annual statement of assurance, OASD(HA) had identified weaknesses in the system development process and has planned corrective actions to improve implementation planning and increase user involvement. In addition, corrective actions planned by OASD(HA) in response to Inspector General, DoD, Report No. 99-068, "Acquisition Management of the Composite Health Care System II Automated Information System," January 21, 1999, should also help to correct the system development weaknesses addressed in this report.

Adequacy of Management's Self-Evaluation. OASD(HA) has taken several actions to improve the management control program for information technology. In a new 5-year plan, OASD(HA) officials identified implementation and user involvement in the assessable unit "Program Executive Office for Military Health System Information Technology." That unit covers design, development, acquisition, test, evaluation, fielding, operation, and maintenance of military health system information technology programs. That assessable unit in the Information Management Technology Directorate has been redefined for the 5-year plan (FY 2001 through FY 2006). Management's self-evaluation is scheduled in FY 2002.

Prior Coverage

During the last 5 years, the Inspector General, DoD, issued two reports discussing health care system development issues and CHCS II. Unrestricted Inspector General, DoD, reports can be accessed at <http://www.dodig.osd.mil/audit/reports>.

Inspector General, DoD

Inspector General, DoD, Report No. D-2001-038, "Allegations Relating to the Procurement of a Report Module for the Composite Health Care System II," January 29, 2001

Inspector General, DoD, Report No. 99-068, "Acquisition Management of the Composite Health Care System II Automated Information System," January 21, 1999

Appendix B. Report Distribution

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